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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Randy D. Petrea et al.
Serial Number:	10/008,201
Filed:	December 6, 2001
For:	**NOVEL SYNTHETIC HYDROPHOBIC SAND FORMULATION**
Group Art Unit:	3643
Examiner:	J. Gellner

DECLARATION UNDER 37 C.F.R. § 1.132

Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Randy D. Petrea, declare the following:

1. I received a Bachelor of Science degree in Chemistry from Pfeiffer College located in Misenheimer, NC, in 1983, and a Masters of Science degree in Analytical Chemistry from The University of Tennessee located in Knoxville, TN, in 1987.

2. For the last 15 years I have been employed by Milliken & Company located in Spartanburg, South Carolina.

3. My experience in the chemical industry has been devoted to the research, development and processing of chemical compounds and products. My current position with Milliken & Company is as a Senior Development Chemist.

4. For the last 14 years with Milliken & Company, my work has primarily focused on the development and application of textile treatment compounds and compositions, and turf treatment compounds and compositions for the Milliken Chemical division of Milliken & Company.

5. I am familiar with the above-referenced patent application as Applicant as well as U.S. Patent No. 4,743,288 (hereinafter Hirsbrunner), particularly the Examples and preferred embodiments producing a treated soil that is not susceptible to wind or water erosion. It is clear that the pending claims of the above-referenced application require a hydrophobic sand formulation including humic acid components therein and that exhibits a certain high level of hydrophobicity in terms of an ethanol drop test delineated within the specification of the above-referenced application. It is also clear that Hirsbrunner actually teaches a specific soil formulation (or a sand formulation) that specifically includes humic acid therein and definitively meets the limitations noted above.

6. I had undertaken by both myself and my lab assistant, under my direction, the production, to the best of our, of sand formulations in accordance with the specific examples 1-3 taught within the Hirsbrunner reference. After first producing these Hirsbrunner sand formulations, ethanol drop testing was undertaken (as followed within the Claim of my pending application) to determine the hydrophobic level of such Hirsbrunner formulations. In every case, the ethanol drop (2M) immediately penetrated the sand formulation, thus indicating no level of hydrophobicity. Interestingly, the Hirsbrunner formulations did exhibit extremely strong cohesive properties such that the sand would not fall apart, even after turning the sample sand formulation upside down without any barrier from falling, just as basically taught as the purpose behind such a formulation within the Hirsbrunner patent. Such results show that the Hirsbrunner formulations did not meet the limitations required within my pending claimed invention.

7. Thus, in my opinion, Hirsbrunner's soil and/or sand formulations do not meet the same claim requirements of the presently claimed invention, nor does this reference lend any ability to produce the same sand formulations encompassed within the present claim. Hence, in my opinion, such data shows the lack of anticipation of my claimed invention by the Hirsbrunner patent teachings and is also relevant as indicia of nonobviousness of my invention in view of Hirsbrunner.

8. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

Signed: Randy D. Petrea Date: October 1, 2003
Name: Randy D. Petrea
Residence: Spartanburg, South Carolina
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Comparison Examples

Minimum Ethanol Drop Method

The sand formulations produced below were characterized by a minimum ethanol drop method. For the tests, a 15 mm petri dish with one eighth of an inch of the sample sand (made below in the Examples 1-3) was supplied. Ten drops of two molar ethanol were placed on top of the test sand and a stopwatch was used to record the penetration time. This test required that the drops that last an average of ten seconds be given the numerical value of the molar solution tested.

Test Sand Formulations

EXAMPLE 1 (from US Patent # 4,743,288, cols. 3 and 4)

A pre-condensate solution (component A) is prepared from:

Urea-formaldehyde pre-condensate	1500	parts
Insoluble pigment/filler (coffee grounds)	250	
Phosphate buffer	3	
Sodium hydroxide	30	
Acetate buffer	40	
Water	3127	
	4950	

50 parts of vegetable (guar) gum was also added. The pH of the solution was stabilized at 7.2.

An initiator (component B), being phosphoric acid, was added in an amount of 100 parts, diluted with 5000 parts water. Upon mixing A and B together, a final pH of 3.0 was obtained.

The mixed solution was diluted to 2.4% and 8 milliliters thereof were applied to 12 grams of sand. The coated sand was allowed to dry at room temperature for 24 hours. Following air drying the MED was evaluated by placing a drop of water on the surface of the sand. The water penetrated the sand upon contact for an MED of 0.

EXAMPLE 2 (from col. 4)

A solution (component A) is prepared from:

Urea-formaldehyde pre-condensate	600	parts
Pigment (carbon black)	10	
Potassium acetate	20	
Water	400	
	1030	

This solution had a pH of 7.5.

To 100 parts of this solution was added 10.8 parts of a 50% citric acid solution (component B); the resultant pH was measured to be 4.0. The solution was then allowed to set at 25°C for about 3 hours.

The mixed solution was diluted to 2.4% and 8 milliters thereof were applied to 12 grams of sand. The coated sand was allowed to dry at room temperature for 24 hours. Following air drying the MED was evaluated by placing a drop of water on the surface of the sand. The water penetrated the sand upon contact for an MED of 0.

EXAMPLE 3 (from col. 4)

To 100 parts of the component A solution of Example 2 were added 6 parts of potassium hydroxide pellets (1M concentration, having a pH of 13.4).

The mixed solution was diluted to 2.4% and 8 milliters thereof were applied to 12 grams of sand. The coated sand was placed in an oven for 8 hours at 60°C to simulate desert conditions and allowed to dry. Following drying, the MED was evaluated by placing a drop of water on the surface of the sand. The water penetrated the sand upon contact for an MED of 0.

The examples in US Pat. # 4,743,288 did not demonstrate any water repellency, although they did perform extremely well at holding the sand together and allowing water to penetrate through the sand profile. This is just the opposite of the Milliken invention where we created an hydrophobic sand that is not readily penetrated by water.

In furtherance of the Declaration to which this page is attached, I, Randy D. Petrea, do solemnly attest to the fact that I had my lab assistants perform, under my direction, the above experiments.

Date: October 1, 2003

Randy D. Petrea